

FACT SHEET FOR NPDES PERMIT NO. WA0038938

**OLYMPIC CORRECTION CENTER
WASTEWATER TREATMENT PLANT**

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INTRODUCTION

The Federal Clean Water Act (FCWA, 1972, and later modifications, 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System of permits (NPDES permits), which is administered by the Environmental Protection Agency (EPA). The EPA has delegated responsibility to administer the NPDES permit program to the state of Washington on the basis of Chapter 90.48 RCW which defines the Department of Ecology's (Department) authority and obligations in administering the wastewater discharge permit program.

The regulations adopted by the state include procedures for issuing permits (Chapter 173-220 WAC), technical criteria for discharges from municipal wastewater treatment facilities (Chapter 173-221 WAC), water quality criteria for surface and ground waters (Chapters 173-201A and 200 WAC), and sediment management standards (Chapter 173-204 WAC). These regulations require that a permit be issued before discharge of wastewater to waters of the state is allowed. The regulations also establish the basis for effluent limitations and other requirements which are to be included in the permit. One of the requirements (WAC 173-220-060) for issuing a permit under the NPDES permit program is the preparation of a draft permit and an accompanying fact sheet. Public notice of the availability of the draft permit is required at least thirty days before the permit is issued (WAC 173-220-050). The fact sheet and draft permit are available for review (see [Appendix A--Public Involvement](#) of the fact sheet for more detail on the Public Notice procedures).

The fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in this review have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Comments and the resultant changes to the permit will be summarized in Appendix D--Response to Comments.

GENERAL INFORMATION

Applicant:	Department of Corrections
Facility Name and Address:	Olympic Corrections Center 11235 Hoh Mainline Forks, WA 98331-9145
Type of Treatment:	Activated Sludge
Discharge Location:	Snahapish River (Tributary to Clearwater River) Latitude: 47° 43' 00" N Longitude: 124° 08' 15" W.
Water Body ID Number:	WA-21-1020

BACKGROUND INFORMATION

DESCRIPTION OF THE FACILITY

HISTORY

The Olympic Corrections Center (OCC) is located in Jefferson County about 25 miles south of the City of Forks. The OCC is a minimum-security adult correctional institution. In addition, the OCC provides wastewater treatment for the Department of Natural Resources (DNR) maintenance shop located adjacent to OCC. See Appendix C for location map.

The OCC wastewater treatment plant (WWTP) was initially constructed in 1981. The institution then consisted of an administration building, one dormitory for inmate housing, laundry and kitchen facilities, maintenance shop, wastewater treatment plant and water supply system. The original WWTP was sized to serve a total staff and inmate population of 100.

The original facility consisted of a single lagoon that discharged intermittently to Honor Camp Creek, a tributary of the Snahapish river.

The facility was subsequently upgraded to serve 320 inmates and provide a design flow of 43,000 gallons per day (gpd). The construction added headworks with a manually cleaned bar screen and a 2-inch Parshall flume, two aerated ponds, a polishing pond, and chlorine disinfection. An outfall and diffuser were also constructed to discharge the treated wastewater to the Snahapish River.

The facility was upgraded again in 1991 to accommodate a total inmate population of 400, a maximum month average flow of 89,000 gpd, a peak hour flow of 250 gallons per minute (gpm). This upgrade included installation of a channel grinder in the headworks, structural modifications to the bottom and sides of Ponds 1 and 2, increased aeration capacity, the addition of effluent filtration and ultraviolet (UV) disinfection systems, installation of an effluent irrigation system, and addition of a standby power generator.

Since the 1991 upgrade, the plant has discharged treated effluent to the Snahapish River during the wet weather season (approximately October through April) and to the land application site during dry weather months (approximately May through September). In accordance with the Operations and Maintenance (O&M) manual, the plant staff has been operating the first two aerated ponds in parallel and running the aerators intermittently. The plant continues to have high flows during the wet season due to infiltration into the collection system and significant precipitation on the ponds.

COLLECTION SYSTEM STATUS

All buildings at the OCC are connected to the wastewater collection system. The institution has no industries that discharge significant quantities of industrial waste or high organic loads into the collection system. In addition to the OCC kitchen and laundry facilities, there is a DNR equipment repair shop that discharges a small volume of municipal strength wastewater to the WWTP for treatment. All wastewater flows are collected at the OCC and DNR camp and gravity piped to the treatment plant located on the west side of the Mainline Road across from the institution.

The collection system was constructed in 1968 and consists of 8-inch concrete pipes. These concrete pipes convey the flow to the Mainline Road where it is piped to the treatment plant through 8-inch PVC piping which was installed in 1981 with construction of the wastewater facility.

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TREATMENT PROCESSES (PRIOR TO 1997)

Influent flow enters the WWTP at the headworks, which consists of a dual concrete channel structure. The channel depth is approximately 12-inches at the inlet and increases to 14-inches in the area immediately upstream of the Parshall flume.

The influent flow is passed through the sewage grinder and then to the Parshall flume and bubbler flow measuring system. Flow measurements are transmitted to the flow recorder located in the laboratory building. The flow recorder is a two-pen strip chart recorder that records both influent and effluent flows on a hard copy.

A manually cleaned bar screen is installed in a parallel channel in case of grinder failure.

Wastewater flows by gravity from the headworks to the three aerated lagoons (# 1, 2, and 3). Aerated lagoons # 1 and # 2 are operated in parallel. Lagoons # 1 and # 2 each have an approximate treatment volume of 705,000 gallons and an effective treatment depth of 9 feet. Influent flow is split at the flow distribution box at the headworks outlet and piped to the lagoons via two 8-inch diameter pipelines. In 1992 Lagoons # 1 and # 2 were upgraded with the construction of new concrete linings and the installation of a new 15 HP floating surface aerator in each lagoon. The overflow from Lagoons # 1 and # 2 is combined and discharged by gravity to Lagoon # 3 via a single 8-inch diameter pipeline.

Lagoon # 3 is designed to be a facultative settling pond with a 5 HP floating type aerator to mix and aerate the lagoon upper zone. This lagoon has an approximate volume of 663,000 gallons with an effective treatment depth of 10 feet and 2 feet of sludge storage depth. Lagoon # 3 is capable of discharging to two different locations. During wet weather months, the lagoon effluent is filtered, disinfected and gravity discharged to the Snahapish River. Discharge to the river is not allowed by the existing NPDES permit when river flow is below 11.7 cubic feet per second (cfs). In dry weather months, the effluent from Lagoon # 3 is pumped to a land application system.

During wet weather months, Lagoon # 3 discharges to a sand media effluent filter and ultraviolet disinfection system. Treated wastewater gravity flows from Lagoon # 3 to the filter through a 6-inch diameter pipeline. The effluent sand filter operates continuously with a rapid-rate granular media filter bed having an approximate filtering area of 72 square feet. The filter is equipped with an automatic backwash feature. Backwash water is discharged to the In-Plant Pump Station and returned to the plant headworks by alternating, submersible pumps. The filtered effluent leaves the filter through an 8-inch diameter pipeline that is connected to the UV Disinfection Units. The effluent disinfection system consists of two UV units that operate in parallel. Each unit contains 14 UV lamps arranged in single banks. These banks are configured parallel to the flow direction and are designed to be fully immersed in the treated effluent flow. The disinfected effluent gravity flows from the UV unit to the flow measurement manhole through an 8-inch diameter pipeline. The effluent flow measurement manhole consists of one 2-inch Parshall flume and bubbler type flow measuring device, and composite wastewater sampler.

TREATMENT PROCESS UPGRADE (1997)

Due to repeated violations of the effluent limits included in the NPDES waste discharge permit, the Department of Corrections was issued a compliance order (No. 95WQ-S397) in January 1996 requiring corrective actions. On June 19, 1997 the Department approved an engineering report for improvements to the WWTP. The 1997 construction included the following modifications and additions:

- two new grit chambers;
- three new selector basins with mixers;

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- convert Lagoon #1 into a 170,000-gallon activated sludge basin;
- two new 20 feet diameter secondary clarifiers;
- 20 new diameter effluent holding tank;
- addition of two new 150 gpm effluent sprayfield pumps and modification to existing sprayfield;
- convert existing 800,000 gallon aerated lagoon (Lagoon # 2) into a sludge storage pond;
- modify existing laboratory; and
- miscellaneous piping, electrical, site-work, and other appurtenances to complete project.

See Appendix C for flow diagram, layout and hydraulic profile.

The new WWTP is Classified as a Class II facility (WAC 173-230-140); therefore, the operator in responsible charge of the facility shall hold a valid certificate of at least the same classification (WAC 173-230-040).

The plans and specifications for the grit chamber and effluent sprayfield conduit project were approved by the Department on April 29, 1997, and construction began in June 1997. The plans and specifications for the majority of the project were approved on July 7, 1997, and construction for the treatment plant upgrade began in August 1997. All of the project construction will be completed in November 1998.

ULTRAVIOLET DISINFECTION SYSTEM

UV disinfection is a physical process that uses electromagnetic energy to prevent cells from further reproduction. UV disinfection systems consist of UV lamps within a reactor, electronic ballast, power distribution centers, system controls, and a lamp cleaning rack.

UV light at a wavelength of 253.7 nanometers (nm) has the optimum germicidal effect. For wastewater disinfection, mercury vapor lamps are used to provide the desired wavelength. These lamps are inserted into quartz sleeves and then placed into wastewater. The quartz sleeves prevents scale from building up on the lamps and prevent the lamps from being cooled by the wastewater (UV lamps are less efficient at lower temperatures).

UV dosage is measured in units of milliwatt seconds per square centimeter ($\mu\text{W}\cdot\text{sec}/\text{cm}^2$) and is a function of light intensity multiplied by the time the organism is exposed. UV detectors mounted near the lamps measure the average UV intensity. Dosage is used for process control. Lamps or banks of lamps can be turned on and off to maintain a target UV dosage at varying flow rates.

The parameters that affect dosage received by the pathogens and therefore disinfection performance are:

- UV intensity
- Exposure time (flow rate and hydraulic conditions)
- UV transmittance through the wastewater
- Wastewater suspended solids

UV systems designed to meet 200 fecal coliforms/100 mL will normally produce fecal coliform counts in the range of 5 to 20/100 mL. The options for scheduled lamp cleaning can be based on fecal counts (i.e., when counts approach 100/100 mL, the lamps are cleaned) or on the measurement of a percent of lamp intensity.

The UV control and monitoring system includes the provisions for the following parameters:

- Individual lamp status and alarm

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- GFI status for each UV rack with trip alarm
- UV Intensity
- UV intensity low warning

In the event of failure or interruption of operation of the UV control and monitoring system each power distribution center shall operate and provide the designed disinfection performance. The UV control and monitoring system is provided with a display screen and message center that allows complete operator interface. Operator interface is menu driven with automatic fault message windows appearing upon alarm conditions. During times that the facility is not manned (i.e., evenings and weekends), all alarms are telemetered to the on-duty treatment plant staff person.

DISCHARGE RECEIVING WATER OUTFALL

During wet weather months, secondary treated and disinfected effluent is discharged from the facility via a 1,800 foot long 8-inch diameter PVC gravity pipeline into the Snahapish River through a ductile iron diffuser.

DISCHARGE LAND APPLICATION

During dry weather months effluent from Lagoon # 3 is pumped to the land disposal area (sprayfield). The land disposal system originally consisted of:

- Effluent storage in Lagoon # 3;
- Diesel powered centrifugal pump station;
A 4-inch diameter flexible hose and strainer basket assembly connected the diesel powered pump station to Lagoon # 3. The suction hose, with strainer basket attached, was placed in Lagoon # 3 and tied off at a height that will allow the hose to remove solids from the bottom of the lagoon. The flexible hose was then connected to the suction end of the diesel pump located at the sprayfield pump station at the WWTP. The diesel powered pump discharged through a 6-inch diameter, 1720 feet long pipeline to the effluent sprayfield. Sodium hypochlorite was injected into the pump's discharge piping with a positive displacement-metering pump located in the chlorine building;
- 17-acre effluent sprayfield;
- 6-inch and 4-inch PVC piping;
- Groundwater monitoring well network; and
- Sodium hypochlorite disinfection system and 14-riser pipe/sprinkler head assemblies at the sprayfield.

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The land disposal system was replaced in 1998 with the following upgrade:

- New 20 feet diameter effluent holding tank (30,000 gallons).

The holding tank holds effluent from the clarifier prior to being pumped for land application at the existing sprayfield during dry weather operation. During river-discharge operation, the tank is bypassed and clarified effluent flows directly to the effluent sand filter. The tank has a high and low float switch to control the sprayfield pump on and off operation. Additional liquid storage volume of 4300 gallons at the tank bottom provided for chlorine contact time of one hour at the design flow of 0.104 million gallons per day (MGD).
- Addition of two new 150 gpm effluent sprayfield pumps.

The effluent pump station consists of two motor-driven, centrifugal pumps that pumps the effluent from the storage tank to the sprayfield through the existing 8-inch forcemain. Float switches in the storage tank control these pumps. Under normal operation only one pump will operate with the second serving as a standby unit.
- 17-acre effluent sprayfield.

The 17-acre sprayfield is a forested site located north of the treatment plant. The sprinkler heads are each capable of discharging treated effluent in a 130 feet radius pattern. Only one sprinkler head at any given time and the operator physically rotates the sprinkler head to new risers on a daily basis.
- New effluent disinfection system.

Effluent is disinfected by addition of liquid hypochlorite from a metering pump. Sodium hypochlorite is mixed with the clarified effluent prior to entering the storage tank. A flow meter on the effluent line is used to record flow and controls the sodium hypochlorite feed pump.

The groundwater-monitoring network has four observation wells at depths between 30 to 50 feet. Three of these wells are located down gradient of the land application area to determine the impact of the sprayfield effluent on groundwater. The fourth well is located up gradient of the land application site serving as a control for comparison of collected groundwater analytical data.

RESIDUAL SOLIDS

The treatment facilities remove solids during the treatment of the wastewater at the headworks (grit and screenings), and at the secondary clarifiers, in addition to incidental solids (rags, scum, and other debris) removed as part of the routine maintenance of the equipment. Grit, rags, scum and screenings are drained and disposed of as solid waste at the local landfill. Solids removed from the secondary clarifier are stored in the sludge storage pond, removed periodically (seven to eight years), dewatered and disposed at a disposal site under a permit from the Jefferson County Health District.

PERMIT STATUS

The previous permit for this facility was issued on June 18, 1992. The previous permit placed effluent limitations on 5-day Biochemical Oxygen Demand (BOD₅), Total Suspended Solids (TSS), pH, and Fecal Coliform bacteria for discharge to the Snahapish River. The previous permit also placed effluent limitations on nitrate (as N), total coliform bacteria, total dissolved solids, and pH for discharge to the land application system.

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<u>Parameter</u>	<u>Monthly Average</u>	<u>Weekly Average</u>
Biochemical Oxygen Demand (5 day)	30 mg/l, 22.3 lb/day	45 mg/l, 33.4 lb/day
Total Suspended Solids	30 mg/l, 22.3 lb/day	45 mg/l, 33.4 lb/day
Fecal Coliform Bacteria	200/100 ml	400/100 ml
pH	shall not be outside the range 6.0 to 9.0	

An application for permit renewal was submitted to the Department on November 5, 1996, and accepted by the Department on November 7, 1996.

SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

The facility received its last inspection on August 5, 1997.

During the history of the previous permit, the Permittee has not been in compliance, based on Discharge Monitoring Reports (DMRs) submitted to the Department and inspections conducted by the Department. The following Tables shows that the number of permit effluent limitation violations that has occurred at the facility over the last five years (May 1992 through April 1997. As can be seen from the Tables, the number of violations has increased over the years. The major violations are related to Total Suspended Solids discharged from the facility. These violations are due to the regrowth of algae in the third lagoon and the operation of the effluent filter. This third lagoon will not exist with the proposed design; therefore, the algae will no longer be a problem.

PERMIT EFFLUENT LIMITATION VIOLATIONS

	<u>Influent (Design)</u>		<u>Effluent (Monthly)</u>					
	<u>BOD#/d</u>	<u>TSS #/d</u>	<u>BOD effl</u>	<u>BOD %</u>	<u>BOD #/d</u>	<u>TSS effl</u>	<u>TSS %</u>	<u>TSS #/d</u>
DATES	<u>>144 #/d</u>	<u>>160 #/d</u>	<u>>30 mg/L</u>	<u><85%</u>	<u>>22.3 #/d</u>	<u>>30 mg/L</u>	<u><85%</u>	<u>>22.3 #/d</u>
5/92 to 4/93	2	0	0	0	2	1	4	2
5/93 to 4/94	6	4	0	1	0	4	5	6
5/94 to 4/95	2	5	0	1	1	1	0	2
5/95 to 4/96	2	6	2	5	3	5	6	8
5/96 to 4/97	3	0	3	0	5	11	11	11
Total =	15	15	5	7	11	22	26	29

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Effluent (Weekly)				
	BOD		TSS	
	>45 mg/L	>33.4 #/d	>45 mg/L	>33.4 #/d
5/92 to 4/93	0	2	3	3
5/93 to 4/94	0	0	8	8
5/94 to 4/95	0	3	1	7
5/95 to 4/96	2	4	12	15
5/96 to 4/97	1	12	36	32
Total =	3	21	60	65

WASTEWATER CHARACTERIZATION

The concentration of pollutants in the discharge was reported in the NPDES application and in discharge monitoring reports. The effluent is characterized as follows:

Table 1: Wastewater Characterization

Parameter (Maximum Month Average)	Concentration
Flow	0.217 MGD
Fecal Coliform Bacteria	42/100 mL
BOD (5 day)	32 mg/L
Total Suspended Solids	42 mg/L
Ammonia (as N)	21 mg/L

PROPOSED PERMIT LIMITATIONS

Federal and state regulations require that effluent limitations set forth in a NPDES permit must be either technology- or water quality-based. Technology-based limitations for municipal discharges are set by regulation (40 CFR 133, and Chapters 173-220 and 173-221 WAC). Water quality-based limitations are based upon compliance with the Surface Water Quality Standards (Chapter 173-201A WAC), Ground Water Standards (Chapter 173-200 WAC), Sediment Quality Standards (Chapter 173-204 WAC) or the National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992.) The most stringent of these types of limits must be chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

The limits in this permit are based in part on information received in the application. The effluent constituents in the application were evaluated on a technology- and water quality-basis and the limits necessary to meet the rules and regulations of the state of Washington were determined and included in this permit. The Department does not develop effluent limits for all pollutants that may be reported on the application as present in the effluent. Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and do not have a reasonable potential to cause a water quality violation. If significant changes occur in any constituent, as described in 40 CFR 122.42(a), the Permittee is required to notify the Department.

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DESIGN CRITERIA

In accordance with WAC 173-220-150 (1)(g), flows or waste loadings shall not exceed approved design criteria.

The design criteria for this treatment facility are taken from May 1997 engineering report prepared by Gray & Osborne, Inc. and are as follows:

Table 2: Design Standards for Olympic Corrections Center WWTP.

Parameter	Design Quantity
Monthly average flow (max. month)	0.104 MGD
Instantaneous peak flow (hour)	0.360 MGD
BOD ₅ influent loading	193 lb./day
TSS influent loading	311 lb./day
Ammonia	21.7 lb./day
TKN	32.5 lb./day
Design inmate population	400

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

Municipal wastewater treatment plants are a category of discharger for which technology-based effluent limits have been promulgated by federal and state regulations. These effluent limitations are given in the Code of Federal Regulations (CFR) 40 CFR Part 133 (federal) and in Chapter 173-221 WAC (state). These regulations are performance standards that constitute all known available and reasonable methods of prevention, control, and treatment for municipal wastewater.

The following technology-based limits for pH, fecal coliform, BOD₅, and TSS are taken from Chapter 173-221 WAC are:

Table 3: Technology-based Limits.

Parameter	Limit
pH:	shall be within the range of 6 to 9 standard units.
Fecal Coliform Bacteria	Monthly Geometric Mean = 200 organisms/100 mL Weekly Geometric Mean = 400 organisms/100 mL
BOD ₅ (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L
TSS (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L

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The following technology-based mass limits are based on WAC 173-220-130(3)(b) and 173-221-030(11)(b).

Monthly effluent mass loadings (lbs/day) were calculated as the maximum monthly design flow (0.104 MGD) x Concentration limit (30 mg/L) x 8.34 (conversion factor) = mass limit 26.0 lb./day.

The weekly average effluent mass loading is calculated as 1.5 x monthly loading = 39.0 lbs/day.

SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-060 states that waste discharge permits shall be conditioned such that the discharge will meet established Surface Water Quality Standards. The Washington State Surface Water Quality Standards (Chapter 173-201A WAC) is a state regulation designed to protect the beneficial uses of the surface waters of the state. Water quality-based effluent limitations may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin-wide total maximum daily loading study (TMDL).

NUMERICAL CRITERIA FOR THE PROTECTION OF AQUATIC LIFE

"Numerical" water quality criteria are numerical values set forth in the state of Washington's Water Quality Standards for Surface Waters (Chapter 173-201A WAC). They specify the levels of pollutants allowed in receiving water while remaining protective of aquatic life. Numerical criteria set forth in the Water Quality Standards are used along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limitations, they must be used in a permit.

NUMERICAL CRITERIA FOR THE PROTECTION OF HUMAN HEALTH

The state was issued 91 numeric water quality criteria for the protection of human health by the U.S. EPA (EPA 1992). These criteria are designed to protect humans from cancer and other disease and are primarily applicable to fish and shellfish consumption and drinking water from surface waters.

NARRATIVE CRITERIA

In addition to numerical criteria, "narrative" water quality criteria (WAC 173-201A-030) limit toxic, radioactive, or deleterious material concentrations below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh (WAC 173-201A-130) and marine (WAC 173-201A-140) waters in the state of Washington.

ANTIDEGRADATION

The state of Washington's Antidegradation Policy requires that discharges into receiving water shall not further degrade the existing water quality of the water body. In cases where the natural conditions of receiving water are of lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. Similarly, when the natural conditions of receiving water are of higher quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. More information on the state Antidegradation Policy can be obtained by referring to WAC 173-201A-070.

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The Department has reviewed existing records and is unable to determine if ambient water quality is either higher or lower than the designated classification criteria given in Chapter 173-201A WAC; therefore, the Department will use the designated classification criteria for this water body in the proposed permit. The discharges authorized by this proposed permit should not cause a loss of beneficial uses.

CRITICAL CONDITIONS

Surface water quality-based limits are derived for the waterbody's critical condition, which represents the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or characteristic water body uses.

MIXING ZONES

The Water Quality Standards allow the Department to authorize mixing zones around a point of discharge in establishing surface water quality-based effluent limits. Both "acute" and "chronic" mixing zones may be authorized for pollutants that can have a toxic effect on the aquatic environment near the point of discharge. The concentration of pollutants at the boundary of these mixing zones may not exceed the numerical criteria for that type of zone. Mixing zones can only be authorized for discharges that are receiving all known, available, and reasonable methods of prevention, control and treatment (AKART) and in accordance with other mixing zone requirements of WAC 173-201A-100.

DESCRIPTION OF THE RECEIVING WATER

The facility discharges to the Snahapish River that is designated as a Class AA (Freshwater) receiving water in the vicinity of the outfall. Characteristic uses include the following:

water supply (domestic, industrial, agricultural); stock watering; fish migration; fish rearing, spawning and harvesting; wildlife habitat; primary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce and navigation.

Water quality of this class shall markedly and uniformly exceed the requirements for all or substantially all uses.

Water quality of this class shall meet or exceed the requirements of selected and essential uses.

SURFACE WATER QUALITY CRITERIA

Applicable criteria are defined in Chapter 173-201A WAC for aquatic biota. In addition, U.S. EPA has promulgated human health criteria for toxic pollutants (EPA 1992). Criteria for this discharge are summarized below:

Fecal Coliforms	50 organisms/100 mL maximum geometric mean
Dissolved Oxygen	9.5 mg/L minimum
Temperature	16 degrees Celsius maximum or incremental increases above background
pH	6.5 to 8.5 standard units
Turbidity	less than 5 NTUs above background
Toxics	No toxics in toxic amounts (see Appendix C for numeric

criteria for toxics of concern for this discharge)

CONSIDERATION OF SURFACE WATER QUALITY-BASED LIMITS FOR NUMERIC CRITERIA

Pollutant concentrations in the proposed discharge exceed water quality criteria with technology-based controls that the Department has determined to be AKART. A mixing zone is authorized in accordance with the geometric configuration, flow restriction, and other restrictions for mixing zones in Chapter 173-201A WAC and is defined as follows:

The most restrictive chronic and acute mixing zone criteria, under critical receiving water conditions, are the limitations on the use of river flow and plume width respectively. The maximum dilution factors which can be achieved in the mixing zone with 9.4 cfs (7Q10) river flow and predicted effluent flows are as follows: The dilution factors have been determined to be (from Approved Engineering Report):

	Acute	Chronic
Aquatic Life	2.3	15.6

Pollutants in an effluent may affect the aquatic environment near the point of discharge (near field) or at a considerable distance from the point of discharge (far field). Toxic pollutants, for example, are near-field pollutants--their adverse effects diminish rapidly with mixing in the receiving water. Conversely, a pollutant such as BOD is a far-field pollutant whose adverse effect occurs away from the discharge even after dilution has occurred. Thus, the method of calculating water quality-based effluent limits varies with the point at which the pollutant has its maximum effect.

The derivation of water quality-based limits also takes into account the variability of the pollutant concentrations in both the effluent and the receiving water.

The critical condition for the Snahapish River is the seven-day average low river flow with a recurrence interval of ten years (7Q10). Ambient data at critical conditions in the vicinity of the outfall was taken from the Engineering Report which considered both historical data and a limited amount of monitoring study conducted in October 1996. The ambient background data used for this permit includes the following from the approved Engineering Report:

Parameter	Value used
7Q10 low flow	9.4 cfs
Depth	0.5 feet
Width	11 feet
Temperature	15o C
pH (high)	7.6
Dissolved Oxygen	8.7 mg/L
Total Ammonia-N	0.4 mg/L
Fecal Coliform	42/100 mL dry weather (maximum)

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BOD₅--Under critical conditions there was a prediction of a violation of the dissolved oxygen criterion for the receiving water. A BOD₅ technology-based effluent limit (30 mg/L) and Ammonia (as N) effluent limit based on the toxicity effect (13 mg/L, see below, "Toxic Pollutants") was not found to be protective of the dissolved oxygen criterion when temperatures in the receiving water exceed 15.0 °C. Therefore, the operation of the facility includes monitoring the Snahapish River for temperature and land applying the effluent when river temperatures exceed 15.0 °C.

The impact of BOD and ammonia on the receiving water was modeled using Streeter Phelps Dissolved Oxygen model at critical condition. The technology-based effluent limitation for BOD₅ described under "Technology-Based Effluent Limitations" above and the toxic limit for ammonia-nitrogen was used in the calculation. The results of the DO study determined that the effluent will have to be removed from the receiving water when the temperature of the Snahapish River exceeds 15.0 °C. The calculations used to determine dissolved oxygen impacts are shown in Appendix C. The ammonia limit based on the dissolved oxygen analyses is limited to 5 mg/l based on the ability of the facility to reliably treat to that level.

Temperature and pH--The impact of pH and temperature were modeled using the calculations from EPA, 1988. The input variables were dilution factor 15.6 upstream temperature 15.0 °C, upstream pH 6.5, upstream alkalinity 25 (as mg CaCO₃/L), effluent temperature 22.0 °C, effluent pH of 6.5, effluent pH of 8.5, and effluent alkalinity 150 (as mg CaCO₃/L).

The effluent is not discharged to the receiving water when Snahapish River temperatures are above 15.0 °C. Under this conditions there is no predicted violation of the Water Quality Standards for Surface Waters. Therefore, the technology-based effluent limitation for pH was placed in the permit and temperature was not limited.

Fecal coliform--The numbers of fecal coliform were modeled by simple mixing analysis using the technology-based limit of 400 organisms per 100 ml and a dilution factor of 15.6.

Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters with the technology-based limit. Therefore, the technology-based effluent limitation for fecal coliform bacteria was placed in the proposed permit.

Toxic Pollutants--Federal regulations (40 CFR 122.44) require NPDES permits to contain effluent limits for toxic chemicals in an effluent whenever there is a reasonable potential for those chemicals to exceed the surface water quality criteria. This process occurs concurrently with the derivation of technology-based effluent limits. Facilities with technology-based effluent limits defined in regulation are not exempted from meeting the Water Quality Standards for Surface Waters or from having surface water quality-based effluent limits.

The toxic pollutant, ammonia, is present in the discharge. The design effluent limit for ammonia based on the toxic effect in the receiving water was analyzed to determine whether or not effluent limitations would be required in this permit. The determination of ammonia to exceed the water quality criteria was evaluated with procedures given in EPA, 1991(See Appendix C) at the critical condition. The critical condition in this case occurs during the dry season (warm weather). The parameters used in the critical condition modeling are as follows: receiving water flow 9.4 cfs, acute dilution factor 2.3, chronic dilution factor 15.6, receiving water temperature 15 °C, receiving water alkalinity 25 (as mg CaCO₃/L), pH 7.5, and NBOD 1 mg/L. The effluent limits for ammonia can be easily met with the treatment system during the months that effluent is discharged to the Snahapish River (fall to spring). The predicted effluent limits for a monthly average is 10 mg/L and a weekly average is 20 mg/L.

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HUMAN HEALTH

Washington's water quality standards now include 91 numeric health-based criteria that must be considered in NPDES permits. The U.S. EPA in its National Toxics Rule (40 CFR 131.36) promulgated these criteria for the state.

The Department has determined that the applicant's discharge is unlikely to contain chemicals regulated for human health. The discharge will be re-evaluated for impacts to human health at the next permit reissuance.

SEDIMENT QUALITY

The Department has promulgated aquatic sediment standards (Chapter 173-204 WAC) to protect aquatic biota and human health. These standards state that the Department may require Permittees to evaluate the potential for the discharge to cause a violation of applicable standards (WAC 173-204-400).

The Department has determined through a review of the discharger characteristics and effluent characteristics that this discharge has no reasonable potential to violate the Sediment Management Standards.

GROUND WATER QUALITY LIMITATIONS

The Department has promulgated Ground Water Quality Standards (Chapter 173-200 WAC) to protect uses of ground water. Permits issued by the Department shall be conditioned in such a manner so as not to allow violations of those standards (WAC 173-200-100).

The Department believes the Permittee's discharge has the potential to cause a violation of the Ground Water Quality Standards and has imposed the following conditions in the proposed permit:

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<u>Parameter</u>	<u>Ground Water Limitations</u>
Nitrate as N	10 mg/L
Total Coliform Bacteria	1/100 mL
Total Dissolved Solids	500 mg/L
pH	shall not be outside the range 6.5 to 8.5

The Engineering Report for the Wastewater Treatment Facilities approved on June 7, 1991, included the design for the land application system. This system was designed for a total nitrogen loading rate of 12.0 mg/L for the wastewater effluent sprayed on the site.

COMPARISON OF EFFLUENT LIMITS WITH THE EXISTING PERMIT ISSUED June 18, 1992

Parameter	Existing Limits		Proposed Limits	
	Monthly Average	Weekly Average	Monthly Average	Weekly Average
BOD5	30 mg/L	45 mg/L	30 mg/L	45 mg/L
“	22.3 lbs/day	33.4 lbs/day	26 lbs/day	39 lbs/day
TSS	30 mg/L	45 mg/L	30 mg/L	45 mg/L
“	22.3 lbs/day	33.4 lbs/day	26 lbs/day	39 lbs/day
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum
Ammonia ¹	(none)	(none)	(none)	5.0 mg/L

¹ Effluent ammonia (as N) limit, discharged to the Snahapish River, is required because of the dissolved oxygen requirements in the receiving water (see Subsection, above, titled “Consideration of Surface Water Quality-based Limits for Numeric Criteria -- BOD₅”)

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are required (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and the effluent limitations are being achieved.

Monitoring of sludge quantity and quality is necessary to determine the appropriate uses of the sludge. Sludge monitoring is required by the current state and local solid waste management program and also by EPA under 40 CFR 503.

The monitoring schedule is detailed in the proposed permit under Condition S.2. Specified monitoring frequencies take into account the quantity and variability of discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring. The required monitoring frequency is consistent with agency guidance given in the current version of Ecology’s *Permit Writer's Manual* (July 1994) for an activated sludge treatment facility with a discharge of less than of 2.0 MGD.

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Additional monitoring is required to further characterize the effluent. These monitored pollutants could have a significant impact on the quality of the surface water.

LAB ACCREDITATION

With the exception of certain parameters the permit requires all monitoring data to be prepared by a laboratory registered or accredited under the provisions of Chapter 173-50 WAC, *Accreditation of Environmental Laboratories*. The laboratory at this facility is accredited for:

Ammonia
Biochemical Oxygen Demand BOD/CBOD
Dissolved Oxygen
pH
Solids Total Suspended
Fecal Coliform

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The conditions of S3. are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 273-220-210).

PREVENTION OF FACILITY OVERLOADING

Overloading of the treatment plant is a violation of the terms and conditions of the permit. To prevent this from occurring, RCW 90.48.110 and WAC 173-220-150 requires the Permittee to take the actions detailed in proposed permit requirement S.4. to plan expansions or modifications before existing capacity is reached and to report and correct conditions that could result in new or increased discharges of pollutants. Condition S.4. restricts the amount of flow.

OPERATION AND MAINTENANCE (O&M)

The proposed permit contains condition S.5. as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

The permit requires submission of an updated O&M Manual for the entire sewerage system

RESIDUAL SOLIDS HANDLING

To prevent water quality problems the Permittee is required in permit condition S7. to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and state Water Quality Standards.

U.S. EPA under 40 CFR 503 regulates the final use and disposal of sewage sludge from this facility. Sludge is stored in the storage lagoon for up to seven years when it will be dewatered. The dewatered sludge will be hauled by a contract hauler to a permitted land disposal site. The disposal of other solid waste is under the jurisdiction of the Jefferson County Health Department.

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PRETREATMENT

An industrial user survey may be required to determine the extent of compliance of all industrial users of the sanitary sewer and wastewater treatment facility with federal pretreatment regulations (40 CFR Part 403 and Sections 307(b) and 308 of the Clean Water Act), with state regulations (Chapter 90.48 RCW and Chapter 173-216 WAC), and with local ordinances.

DUTY TO ENFORCE DISCHARGE PROHIBITIONS

This provision prohibits the POTW from authorizing a discharger to discharge certain types of waste into the sanitary sewer. The first portion of the provision prohibits acceptance of pollutants that cause pass through or interference. The definitions of pass through and interference are in Appendix B of the fact sheet..

The second portion of this provision prohibits the POTW from accepting certain specific types of wastes, namely those which are explosive, flammable, excessively acidic, basic, otherwise corrosive, or obstructive to the system. In addition wastes with excessive BOD, petroleum-based oils, or which result in toxic gases are prohibited from being discharged. The regulatory basis for these prohibitions is 40 CFR Part 403, with the exception of the pH provisions which are based on WAC 173-216-060.

The third portion of this provision prohibits certain types of discharges unless the POTW receives prior authorization from the Department. The discharges include cooling water in significant volumes, stormwater and other direct inflow sources, and wastewaters significantly affecting system hydraulic loading, which do not require treatment.

The Permittee has implemented several operations to minimize flow and waste loads to the treatment plant. As recommended in the Permittee's Wastewater Pollution Prevention Plan (W2P3, dated December 1996), the following additional practices and structural changes shall be implemented.

POLLUTION PREVENTION PROGRAM

1. Divert storm drains to storm water sewer system;
2. Reroute the effluent from the condensing unit;
3. Replace and install an adequate sized grease interceptor;
4. Implement a cold lunch program;
5. Replace inmate standard urinals with waterless No-Flush Urinals;
6. Replace conventional inmate washers with ASKO Units.

These pollution prevention practices shall also include the institution of a pollution prevention-training program. The program shall teach inmates good operating practices for 1) mixing, handling, and disposal of cleaning solutions and detergents, and 2) water conservation in all applicable areas.

The Permittee's Agreed Order No. DE 95WQ-S397 requires these items to be implemented by November 1, 1998. Therefore, the Permittee shall submit a progress/evaluation report of the completed W2P3 item by June 30, 1999.

SPILL PLAN

The Permittee has developed a plan for preventing the accidental release of pollutants to state waters and for minimizing damages if such a spill occurs. The Permittee has completed and implemented a Pollution

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Prevention Plan for the Olympic Corrections Center facilities. This Plan includes the latest upgrade to the WWTP (See "Treatment Process Upgrade (1997)", above).

OUTFALL EVALUATION

Proposed permit condition S10. requires the Permittee to conduct an outfall inspection and submit a report detailing the findings of that inspection. The purpose of the inspection is to determine the condition of the discharge pipe and diffusers and to determine if sediment is accumulating in the vicinity of the outfall.

GENERAL CONDITIONS

General Conditions are based directly on state and federal law and regulations and have been standardized for all individual municipal NPDES permits issued by the Department.

Condition G1 requires responsible officials or their designated representatives to sign submittals to the Department. Condition G2 requires the Permittee to allow the Department to access the treatment system, production facility, and records related to the permit. Condition G3 specifies conditions for modifying, suspending or terminating the permit. Condition G4 requires the Permittee to apply to the Department prior to increasing or varying the discharge from the levels stated in the permit application. Condition G5 requires the Permittee to construct, modify, and operate the permitted facility in accordance with approved engineering documents. Condition G6 prohibits the Permittee from using the permit as a basis for violating any laws, statutes or regulations. Conditions G7 relates to permit renewal. Condition G8 prohibits the reintroduction of removed substances back into the effluent. Condition G9 states that the Department will modify or revoke and reissue the permit to conform to more stringent toxic effluent standards or prohibitions. Condition G10 incorporates by reference all other requirements of 40 CFR 122.41 and 122.42. Condition G11 notifies the Permittee that additional monitoring requirements may be established by the Department. Condition G12 requires the payment of permit fees. Condition G13 describes the penalties for violating permit conditions.

PERMIT ISSUANCE PROCEDURES

PERMIT MODIFICATIONS

The Department may modify this permit to impose numerical limitations, if necessary to meet Water Quality Standards, Sediment Quality Standards, or Ground Water Standards, based on new information obtained from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

The Department may also modify this permit as a result of new or amended state or federal regulations.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to protect human health, aquatic life, and the beneficial uses of waters of the state of Washington.

The Department has developed a "Basin Approach" to the NPDES permitting process. The Southwest Region is divided into five separate basins. The Olympic Correction Center WWTP is located in the Western Olympic Basin. What this means, is that the five basins will be rotated for the five year permitting cycle, so that, all the permits in that basin will expire in the same year. The next basin year for the Western Olympic Basin is in the year 2000. Therefore, the present permit would have to be reissued

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on June 30, 2000. Since the permit effective date will be December 31, 1998, the permit would not be in effect long enough to complete all of the water quality studies required in the permit. Therefore, the expiration date for this permit will have to be extended for a full five-year permit cycle. The Department proposes that this permit be issued for five years.

REFERENCES FOR TEXT AND APPENDICES

Environmental Protection Agency (EPA)

1996. Olympic Correctional Center Wastewater Treatment Evaluation. Brown and Caldwell. August 14, 1996.
1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.
1991. Technical Support Document for Water Quality-based Toxics Control. EPA/505/2-90-001.
1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington, D.C.
1985. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water. EPA/600/6-85/002a.
1983. Water Quality Standards Handbook. USEPA Office of Water, Washington, D.C.

Metcalf and Eddy.

1991. Wastewater Engineering, Treatment, Disposal, and Reuse. Third Edition.

Tsivoglou, E.C., and J.R. Wallace.

1972. Characterization of Stream Reaeration Capacity. EPA-R3-72-012. (Cited in EPA 1985 op.cit.)

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1994. Permit Writer's Manual. Publication Number 92-109

Water Pollution Control Federation.

1976. Chlorination of Wastewater.

Wright, R.M., and A.J. McDonnell.

1979. In-stream Deoxygenation Rate Prediction. Journal Environmental Engineering Division, ASCE. 105(EE2). (Cited in EPA 1985 op.cit.)

APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to reissue a permit to the applicant listed on page 1 of this fact sheet. The permit contains conditions and effluent limitations that are described in the rest of this fact sheet.

Public notice of application was published on August 22, 1997, in the *Peninsula Daily News* to inform the public that an application had been submitted and to invite comment on the reissuance of this permit.

The Department will publish a Public Notice of Draft (PNOD) to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Water Quality Permit Coordinator
Department of Ecology
Southwest Regional Office
P.O. Box 47775
Olympia, WA 98504-7775

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30) day comment period to the address above. The request for a hearing shall indicate the interest of the party and the reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-220-090). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing (WAC 173-220-100).

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, (360) 407-6279, or by writing to the address listed above.

This permit and fact sheet was written by Gerald L. Anderson.

APPENDIX B--GLOSSARY

Acute Toxicity--The lethal effect of a compound on an organism that occurs in a short period of time, usually 48 to 96 hours.

AKART-- An acronym for "all known, available, and reasonable methods of treatment".

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Average Monthly Discharge Limitation --The average of the measured values obtained over a calendar month's time.

Average Weekly Discharge Limitation -- The highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week. The daily discharge is calculated as the average measurement of the pollutant over the day.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the state. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD₅--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD₅ is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of a treatment facility.

Chlorine--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Chronic Toxicity--The effect of a compound on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Clean Water Act (CWA)--The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Combined Sewer Overflow (CSO)--The event during which excess combined sewage flow caused by inflow is discharged from a combined sewer, rather than conveyed to the sewage treatment plant because either the capacity of the treatment plant or the combined sewer is exceeded.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Additional sampling may be conducted.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

Construction Activity--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

Critical Condition--The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

Dilution Factor--A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the effluent fraction e.g., a dilution factor of 10 means the effluent comprises 10% by volume and the receiving water 90%.

Engineering Report--A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal Coliform Bacteria--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Industrial User-- A discharger of wastewater to the sanitary sewer which is not sanitary wastewater or is not equivalent to sanitary wastewater in character.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Infiltration and Inflow (I/I)--"Infiltration" means the addition of ground water into a sewer through joints, the sewer pipe material, cracks, and other defects. "Inflow" means the addition of rainfall-caused surface water drainage from roof drains, yard drains, basement drains, street catch basins, etc., into a sewer.

Interference -- A discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

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Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal and;

Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent state or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including state regulations contained in any state sludge management plan prepared pursuant to subtitle D of the SWDA), sludge regulations appearing in 40 CFR Part 507, the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

Major Facility--A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

Minor Facility--A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Mixing Zone--An area that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in state regulations (Chapter 173-201A WAC).

National Pollutant Discharge Elimination System (NPDES) --The NPDES (Section 402 of the Clean Water Act) is the federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the state of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington state permit writers are joint NPDES/State permits issued under both state and federal laws.

Pass through -- A discharge which exits the POTW into waters of the state in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation), or which is a cause of a violation of state water quality standards.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Potential Significant Industrial User--A potential significant industrial user is defined as an Industrial User which does not meet the criteria for a Significant Industrial User, but which discharges wastewater meeting one or more of the following criteria:

- a. Exceeds 0.5 % of treatment plant design capacity criteria and discharges <25,000 gallons per day or;

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- b. Is a member of a group of similar industrial users which, taken together, have the potential to cause pass through or interference at the POTW (e.g. facilities which develop photographic film or paper, and car washes).

The Department may determine that a discharger initially classified as a potential significant industrial user should be managed as a significant industrial user.

Quantitation Level (QL) -- A calculated value five times the MDL (method detection level).

Significant Industrial User (SIU) --

- 1) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N and;
- 2) Any other industrial user that: discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow-down wastewater); contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority* on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement (in accordance with 40 CFR 403.8(f)(6)).

Upon finding that the industrial user meeting the criteria in paragraph 2, above, has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority* may at any time, on its own initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(f)(6), determine that such industrial user is not a significant industrial user.

*The term "Control Authority" refers to the Washington State Department of Ecology in the case of non-delegated POTWs or to the POTW in the case of delegated POTWs.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Suspended Solids (TSS)--Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Upset--An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

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Water Quality-based Effluent Limit--A limit on the concentration of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.

APPENDIX C--TECHNICAL CALCULATIONS

Several of the Excel[®] spreadsheet tools used to evaluate a discharger's ability to meet Washington state water quality standards can be found on the Department's homepage at <http://www.wa.gov/ecology>.

APPENDIX D--RESPONSE TO COMMENTS

The entity review comments received from Department of Correction's consultant, Gray and Osborne, dated February 12, 1998, were agreed to and incorporated into the Public Review Draft.

The following comments were received from the Department of Corrections by letter dated April 9, 1998:

1. Page 1, Plant Type

Comment: The existing aerated lagoon wastewater treatment plant will not be completely converted to an activated sludge facility until November 1998. This will affect some of the permit requirements as noted below.

Response: This permit will not be issued until the facility is in operation. Therefore, final limits in the permit will be in affect at that time.

2. Page 4, Summary of Report Submittals

Comment: This summary indicates that reports are required for "Acute Toxicity Characterization Data" (Section S8.C), "Acute Toxicity Tests Characterization Summary Report" (Section S8.C), "Chronic Toxicity Characterization Data" (Section S9.C), and "Chronic Toxicity Characterization Summary Report" (Section S9.C). These sections, however, have been deleted from this new draft permit. Please clarify whether these submittals are required.

Response: The submittals are not required. These report submittals will be deleted from the "Summary of Report Submittals."

3. Page 5, S1. DISCHARGE LIMITATIONS, A. Receiving Water and Ground Water Effluent Limitations

Comment: The maximum daily total ammonia limit of 5 mg/L should not be effective until the wastewater treatment plant is operational as an activated sludge facility (see item #1 above).

Response: This permit will not be issued until the facility is in operation. Therefore, final limits in the permit will be in affect at that time.

Comment: A maximum daily total nitrogen limit of 12.0 mg/L is indicated as an effluent limitation during discharge to the land application site. This limitation should be deleted. Neither the existing aerated lagoon treatment plant nor the new activated sludge plant is designed to remove nitrogen. The new activated sludge plant is designed only to remove ammonia, by biological conversion to nitrate. The requirement to remove total nitrogen is inconsistent with the design described in the approved report and the plans and specifications of the upgraded treatment plant.

Response: The Engineering Report for the Wastewater Treatment Facilities approved on June 7, 1991, included the design for the land application system. This system was designed for a total nitrogen loading rate of 12.0 mg/L for the wastewater effluent sprayed on the site. The previous permit for the lagoon system also limited the quantity of effluent applied to 4525 gallons per acre per day and the application of total nitrogen to 200 pounds per acre per year. These limitations are based on the design criteria in the approved engineering report. The permit also specifies no runoff from the land application site during operation. The recently approved Engineering Report (June 19, 1997) focused only on the treatment plant and did not indicate that the discharge to the land application system was changed from what was originally approved. The Department understands that the activated sludge facility was not specifically designed to meet a total

nitrogen discharge of 12 mg/L; however, the protection of ground water is of utmost importance. Therefore, the permit will focus on the ground water requirement for nitrate of 10 mg/L (see Special Permit condition S1.C). However, the effluent discharged to the land application site will be monitored for total nitrogen with an early warning value of 12 mg/L.

4. Page 7, S2. MONITORING REQUIREMENTS, A. Monitoring Schedule

Comment: Ultraviolet intensity is measured continuously but is not recorded. The “sample type” is better described as “reading”.

Response: This change was made in Section S2. of the permit.

Comment: For Wastewater Effluent, the schedule does not indicate the form of nitrate/nitrite to report. Should the form be “as N”?

Response: Nitrate/nitrite should be reported as N. This change was made in Section S2. of the permit.

Comment: For Receiving Water, temperature should indicate a “grab” or “reading” sample type. There is no temperature recording device install in the river.

Response: The sample type for temperature in the river shall be reading. This change was made in Section S2. of the permit.

5. Page 8, S2. MONITORING REQUIREMENTS, A. Monitoring Schedule

Comment: Footnote 1 is not clear as to the required monitoring schedule for Nitrate/Nitrite. Please clarify whether this parameter must also be measured during discharge to the river.

Response: Refer to the response to the second comment in item 3 above that effluent to the land application system shall be monitored and reported as total nitrogen (as N). Therefore, the parameters TKN and nitrate/nitrite (as N) shall be monitored but reported as total nitrogen on the DMRs when discharging to the land application system.

6. Page 10, S4. FACILITY LOADING, A. Design Criteria

Comment: The permitted loading of NH₄-N should read 21.7 lbs/day instead of 421.7 lbs/day.

Response: This change was made in Section S4. of the permit.

7. Page 14, S5. OPERATION AND MAINTENANCE, G. Operation and Maintenance Manual

Comment: The O&M manual submittal is not included in the summary of Permit Report Submittals on page 4. Since construction of the new activated sludge plant will not be completed until November 1998, it is requested that the O&M manual submittal date be tied to the construction completion instead of a date 90 days after permit issuance.

Response: Since the permit will not become effective until November 1998, Permit Section S5.G was changed to require submittal of the O&M manual to the Department for approval by November 1, 1998.

8. Page 16, S6. PRETREATMENT, C. Pollution Prevention Program

Comment: DOC has implemented, and will continue to implement pollution prevention measures at the OCC. Some of these measures are included in the referenced Pollution Prevention Plan (good operating practices grease interceptor, low flow showerheads, diverting stormwater away from wastewater treatment plant). One pollution prevention measure to be implemented that is not included in the Pollution Prevention Plan is the installation of a fine mechanical screen.

DOC will evaluate the feasibility of implementing a cold lunch program. Cost concerns are being looked at closely. (1) DOC requests that this requirement be removed from the permit. The cold lunch program may be implemented, pending the analysis on cost, security, and operations. In

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addition, the installation of an adequately sized grease interceptor will address pollution concerns related to the kitchen.

The Pollution Prevention requirement of re-routing the effluent from the condensing unit is a \$110,000 project. (2) We are requesting funding for this project for the 1999-2001 biennium. Therefore, please remove the required date for implementation by November 1, 1998.

We are also evaluating the timing of installing waterless No-Flush Urinals due to the extensive remodeling projects that will likely happen during the next biennium. DOC wants to ensure that the use of funds are as efficient and effective as possible, thereby eliminating the possibility of installing new units that would be removed and disposed of the next year. (3) We are requesting that you remove this item from the Pollution Prevention Program requirements.

The Pollution Prevention requirement of installing a training program for inmates is already in progress. Inmates who are responsible for using certain chemicals are trained in proper handling techniques, including pollution prevention and water conservation. (4) A facility wide training program is not feasible because not all inmates are capable of properly handling chemicals and following water conservation rules.

As you can see, DOC has made significant progress implementing the pollution prevention program at OCC. DOC will continue to pursue pollution prevention whenever feasible.

Response: First, the Department would like to commend DOC for their response to the projects identified in the approved Pollution Prevention Plan. The following are specific responses to the above comments:

- (1) This program has been successfully implemented at other DOC facilities around the state. The program was included in the Pollution Prevention Plan submitted to and approved by the Department. The implementation date is flexible and has been moved to November 30, 2001.
- (2) The implementation date for re-routing the effluent from the condensing unit is flexible and has been moved to the end of the next biennium November 30, 2001.
- (3) The implementation date for installing waterless No-Flush Urinals is flexible and has been moved to November 30, 2001. This date can be flexible if there is a commitment from DOC that the urinals will be installed during the remodel.
- (4) A facility wide program for training all inmates to handle chemicals is not the intent of the training program. The training program shall include OCC staff and inmates (on an as need basis) in those areas where chemicals are used so that good operating practices are followed.

The submittal date for the progress/evaluation report of the completed W2P3 items shall be changed to June 30, 2002, to correspond to the change of date for completion of pollution prevention items.

The following review comments were received from Department of Health's, Shellfish Program, dated April 6, 1998.

Comment: Middle of Page 3 fact sheet: 663,00 should be 663,000 I believe.

Response: The change to 663,000 has been made.

Comment: Page 4 fact sheet, second paragraph from bottom: "(mw/cm²)" should be "(Mw-sec/cm²)"

Response: The change to "(Mw-sec/cm²)" has been made.

Comment: Page 7, permit: the sampling frequency is stated a “daily” for UV Intensity. It seems like this should be either “continuous” or at the time period programmed into the system. I think it’s great that you’ve acknowledged UV intensity as a sampling parameter.

-TSS and fecal coliforms are taken once per week. These seem like pretty infrequent indicators to base the frequency of lamp cleaning on, especially since TSS can change so much. I think it would be better to base the lamp cleaning on the dosage (i.e., a given intensity at higher flow rates). While some manufactures refer to a “standard” of 16 Mw-sec/cm² and that 30 Mw-sec/cm² is accepted as the minimum level that prevents photoreactivation of the bacteria. If the UV intensity low warning alarm is set at such levels, it could be used to notify the operators of the minimum frequency of tube cleaning. As intensity and fecal coliform data is collected at the facility over time, these results could be used to indicate the intensity level at which the tubes should be cleaned.

Response: The Operations and Maintenance manual will include the monitoring of TSS, fecal coliform, and UV intensity parameters to determine when the UV lamps should be cleaned. Since TSS and fecal coliform are monitored once per week, UV intensity needs to be monitored daily as a “reading.” I think your comments that manufactures refer to a “standard” of 16 Mw-sec/cm² and that 30 Mw-sec/cm² is accepted as the minimum level that prevents photoreactivation of the bacteria should be used as the initial settings for when the lamp tubes should be cleaned. The Department will require that the O&M manual include the collection of TSS, fecal coliform, and UV intensity data over the first two years of operation to determine the schedule for lamp cleaning. The Department will also require that the cleaning of UV lamps are based on the minimum UV intensity developed. These requirements will be included in permit section S5.G(6).